

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Mahendra K. Sunkara et al.

Filed: September 16, 2003

Serial No: 10/664,072

For: DIRECT SYNTHESIS OF OXIDE
NANOSTRUCTURES OF LOW-MELTING METALS)

Atty. Docket No.: AD138/2001

Mail Stop Amendment
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-150

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) Examiner: Luk, Emmanuel S.
) Group Art Unit: 1722
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UNDER 37 CFR 1.8**

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INFORMATION DISCLOSURE DOCUMENT

Enclosed is a list and copies of references considered by Applicant to be pertinent in the
examination of the above-identified patent application.

Applicant submits this Information Disclosure Statement in accordance with the duty of
disclosure under 37CFR §1.56 and 1.97-1.98. This Statement is filed in accordance with 37 CFR
§1.97(b)(4), prior to issuance of a First Office after the filing of a request for continued examination
under §1.114.

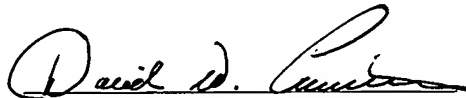
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Applicants(s) submitted herewith patents, publications or other information of which they are aware, which they believe may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR 1.56.

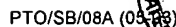
While this Information Disclosure Statement may be "material" pursuant to 37 CFR 1.56 it is not intended to constitute an admission that any patent, publication or other information referred to therein is "Prior art" for this invention unless specifically designated as such.

In accordance with 37 CFR 1.97(b) the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR 1.56 (a) exists.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "David W. Carrithers", with a stylized flourish at the end.

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<div>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</div> <div>(use as many sheets as necessary)</div>																	
Sheet	1	of															

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OTHER PRIOR ART (Including Author, Title, Date Pertinent Pages, ETC.)

Publication No. WO026422A1 for "HIGH PURITY GALLIUM FOR PREPARATION OF COMPOUND SEMICONDUCTOR, AND METHOD AND APPARATUS FOR PURIFYING THE SAME" by Yamamura et al., published on May 11, 2000

Publication NO. WO9965068A1 for "FABRICATION OF GALLIUM NITRIDE SEMICONDUCTOR LAYERS BY LATERAL GROWTH FROM TRENCH SIDEWALLS" by Zheleva et al., published on December 16, 1999

Publication No. WO9944224A1 for "METHOD OF FABRICATING GALLIUM NITRIDE SEMICONDUCTOR LAYERS BY LATERAL OVERGROWTH THROUGH MASKS, AND GALLIUM NITRIDE SEMICONDUCTOR STRUCTURES FABRICATED THEREBY" by Davis et al., published on September 2, 1999

Y.F. Zhang, Y.H. Tang, N. Wang, C.S. Lee, I. Bello, S.T. Lee "ONE DIMENSIONAL GROWTH MECHANISM OF CRYSTALLINE SILICON NANOWIRES," Journal of Crystal Growth 197 (1999) 136-140

J. Westwater, D.P. Gosain, S. Tomiya, S. Usui, and H. Ruda "GROWTH OF SILICON NANOWIRES VIA GOLD/SILANE VAPOR-LIQUID-SOLID REACTION," J. Vac. Sci. Technol. B 15(3), May/June 1997, 554-557

A.M. Morales and C.M. Lieber "A LASER ABLATION METHOD FOR THE SYNTHESIS OF CRYSTALLINE SEMICONDUCTOR NANOWIRES," Science, Vol. 279, January 9, 1998, 208-211

H.F. Yan, Y.J. Xing, Q.L. Hang, D.P. Yu, Y.P. Wang, J. Xu, Z.H. Xi, S.Q. Feng "GROWTH OF AMORPHOUS SILICON NANOWIRES VIA A SOLID-LIQUID-SOLID MECHANISM," Chemical Physics Letters 323 (2000) 224-228

J.L. Gole and J.D. Stout, W.L. Rauch and Z.L. Wang "DIRECT SYNTHESIS OF SILICON NANOWIRES, SILICA NANOSPHERES, AND WIRE-LIKE NANOSPHERE AGGLOMERATES," Applied Physics Letters, Vol. 76, Number 17, 24 April 2000, 2346-2348

J.D. Holmes, K.P. Johnston, R.C. Doty, B.A. Korgel "CONTROL OF THICKNESS AND ORIENTATION OF SOLUTION-GROWN SILICON NANOWIRES," Science, Vol. 287, February 25, 2000, 1471-1473

P. Scheier, J. Marsen, M. Lonfat, W. Schneider, K. Sattler "GROWTH OF SILICON NANOSTRUCTURES ON GRAPHITE," Surface Science 458 (2000, 113-122)

D.P. Yu, Z.G. Bai, Y. Ding, Q. L. Hang, H.Z. Zhang, J.J. Wang, Y.H. Zou, W. Qian, G.C. Xiong, H.T. Zhou, and S.Q. Feng "NANOSCALE SILICON WIRES SYNTHESIZED USING SIMPLE PHYSICAL EVAPORATION," Applied Physics Letters, Vol. 72, Number 26, June 29, 1998, 3458-3460

Sharma et al. "NOVEL VAPOR-LIQUID-SOLID SYNTHESIS METHOD FOR CARBON NANOSTRUCTURES," presented on CD and at Carbon2001 Conference at the University of Kentucky, Lexington, KY in July of 2001

Zhang et al. "MORPHOLOGY AND GROWTH MECHANISM STUDY OF SELF-ASSEMBLED SILICON NANOWIRES SYNTHESIZED BY THERMAL EVAPORATION," Chemical Physics Letters 337 (2001) 18-24, March 30, 20014

Wu et al. "GERMANIUM NANOWIRE GROWTH VIA SIMPLE VAPOR TRANSPORT," Chem. Mater. 2000, 12, 605-607.

Y. F. Zhang, Y.H. Tanh, N. Wang, D.P. Yu, C.S. Lee, I. Bello, and S.T. Lee "SILICON NANOWIRES PREPARED BY LASER ABLATION AT HIGH TEMPERATURE," Applied physics Letters, Vol. 72, Number 15, April 13, 1998, 1835-1837

D.P. Yu, Y.J. Xing, Q.L. Hang, H.F. Yan, J. Xu, Z.H. Xi, S.Q. Feng "CONTROLLED GROWTH OF ORIENTED AMORPHOUS SILICON NANOWIRES VIA A SOLID-LIQUID-SOLID (SLS) MECHANISM," Physica E 9 (2001) 305-309

Lieber, "ONE DIMENSIONAL NANOSTRUCTURES: CHEMISTRY, PHYSICS & APPLICATIONS," Solid State Communications, Vol. 107, No. 11, 607-616

C.H. Liang, G.W. Meng, G.Z. Wang, Y.W. Wang, L.D. Zhang, and S.Y. Zhang, "CATALYTIC SYNTHESIS AND PHOTOLUMINESCENCE OF Ga_2O_3 NANOWIRES" Appl. Phys. Lett. 78, 3202 (2001).

Y.C. Choi, W.S. Kim, Y.S. Park, S.M. Lee, D.J. Bae, Y.H. Lee, G-S Park, W.B. Choi, N.S. Lee and J.M. Kim, "CATALYTIC GROWTH OF Ga_2O_3 NANOWIRES BY ARC DISCHARGE" Adv. Mater. 12, 746 (2000).

W.Q. Han, P. Kohler-Redlich, F. Ernest, and M. Ruhle, "GROWTH AND MICROSTRUCTURE OF Ga_2O_3 NANORODS" Solid State Commun. 115, 527 (2000).

J.Q. Hu, X.L. Ma, N.G. Shang, Z.Y. XIE, N.B. Wong, C.S. Lee, and S.T. Lee, "LARGE-SCALE RAPID OXIDATION SYNTHESIS OF SnO_2 NANORIBBONS" J. Phys. Chem. B 106, 3823 (2002).

X.S. Peng, Y.W. Wang, J. Zhang, X.F. Wang, L.X. Zhao, G.W. Meng, and L.D. Zhang, "LARGE SCALE SYNTHESIS OF In_2O_3 NANOWIRES" Appl. Phys. A 74, 437 (2002).

G. Gundiah, A. Govindaraj, and C.N.R. Rao, "NANOWIRES, NANOBELTS AND RELATED NANOSTRUCTURES OF Ga_2O_3 " Chem. Phys. Lett. 351, 189 (2002).

S. Sharma and M.K. Sunkara, "DIRECT SYNTHESIS OF GALLIUM OXIDE TUBES, NANOWIRES, AND NANOPAINTBRUSHES" The Journal of the American Chemical Society, 124, 12288-12293, (In Press, 2002).

Z.R. Dai, Z.W. Pan, and Z.L. Wang, "GALLIUM OXIDE NANORIBBONS AND NANOSHEETS" J. Phys. Chem. B 106, 902-904 (2002).

M.H. Huang, Y. Wu, H. Feick, N. Tran, E. Weber, and P. Yang, "CATALYTIC GROWTH OF ZINC OXIDE NANOWIRES BY VAPOR TRANSPORT" Adv. Mater. 13, 113 (2001).

Examiner Signature		Date Considered	
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